S 1.71/4: 7 NOT SELECTED (Y)

THE DEPARTMENT
OF STATE

Current Policy

No. 7
November 1975

Bureau of Public Affairs
Office of Media Services

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INTERNATIONAL COOPERATION IN NUCLEAR ENERGY AND NONPROLIFERATION

The following was adapted from statements by Myron B. Kratzer, Acting Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs.

At the outset, I should like to reaffirm the strong commitment of the Department of State to the policy of avoiding the proliferation of nuclear weapons. Secretary Kissinger has expressed personally, on a number of occasions, the importance of this goal and has proposed for international consideration several important measures designed to reduce the risks of further proliferation.

While House Concurrent Resolution 371 deals with several aspects of the control of nuclear weapons, I should like to concentrate my testimony today on the problem of nuclear proliferation as that term is generally used—that is, the acquisition by additional nations of a nuclear weapons or nuclear explosive capability. In particular, I will deal with the question of the proliferation risks arising out of the application of nuclear energy to peaceful purposes. Before commenting on the specific features of House Concurrent Resolution 371, I believe it may be useful to review the historical background of the proliferation issue, as well as some of the technical considerations which bear on it.

Historical Background

Since the dawn of the nuclear age, U.S. policy has been to avoid the spread of nuclear weapons. The Baruch plan, put forward by the United States at the United Nations in the days immediately after World War II, foreshadowed the efforts we have made for the past 30 years to lessen the likelihood of proliferation. This plan proposed the prohibition of nuclear weapons and the placement of sensitive peaceful nuclear activities under international ownership and control. When the plan was rejected by the Soviet Union, we moved to a policy of strict secrecy as a means of containing proliferation. In less than a decade, it became evident that this approach would not succeed. By 1953 both the Soviet Union and the United Kingdom had developed nuclear weapons. Major peaceful nuclear programs had been established by Canada and France and were beginning in many other countries. These facts made it clear that, like all scientific knowledge, nuclear science, which had its origins in Europe, could not remain an American monopoly.

Later that year President Eisenhower, in a speech before the United Nations, laid the foundation for the approach that has governed our nonproliferation policy ever since. In brief, he proposed worldwide cooperation in the peaceful uses of nuclear energy. This was to be accomplished under effective controls so as to insure that other countries could receive the peaceful benefits of the atom without establishing independent programs which could lead to the development of nuclear weapons. The Congress endorsed this approach in 1954 by fundamentally amending the Atomic Energy Act to permit our engaging in nuclear cooperation under strict procedural and substantive controls, including congressional review and oversight.

The revised act provided that certain forms of nuclear cooperation should take place under agreements for cooperation between the United States and each cooperating country or group of countries. Each agreement, including any amendments, must be personally approved by the President, in writing, on the basis of a determination that the agreement will promote, and not constitute an unreasonable risk to, the common defense and security. Subsequently, each agreement is submitted to the Congress and referred to the Joint Committee on Atomic Energy which must report on it to the Congress. The Congress may prevent the agreement from coming into force by adopting a concurrent resolution to that effect within a 30-day period thereafter.

Nonproliferation Measures

I noted earlier that the approach we have followed since the early 1950's has been nuclear cooperation under "effective controls." These controls consist basically of "assurances" by other governments with whom we have agreements that materials and equipment provided by the United States will not be used for the production of nuclear weapons or for other military purposes, with these assurances being independently verified by measures which we designate as "safeguards." Thus, this much misunderstood term refers to the mechanism which has been developed to assure and demonstrate the observance of governmental guarantees against the diversion of nuclear materials and equipment to military purposes. Safeguards rely upon independent and objective measures, including on-site inspection, applied by personnel from outside the inspected country and designed to detect any diversion of nuclear material to unauthorized purposes.

This concept of independent verification of sovereign undertakings, through such measures as inspection by foreign personnel, was a novel one at the time, and the rights to make these inspections were achieved with considerable difficulty, through vigorous use of the bargaining power the United States could exert as a provider of nuclear assistance.

In the early days, and indeed up until the mid-1960's, safeguards were applied by U.S. personnel. For the past decade the responsibility for the application of safeguards was assumed largely by the International Atomic Energy Agency [IAEA] located in Vienna. The need for such an international safeguards system was accentuated by the growing number of nuclear supplier countries. Today more than 50 IAEA inspectors are applying safeguards, including on-site inspection, to more than 60 major facilities in some 50 countries.

The IAEA deserves credit for its effective performance in this difficult field. Great credit is also due the many nations which have accepted international safeguards, a decision which called for a significant departure from traditional concepts concerning national sovereignty.

In putting this decision into practice, it must be borne in mind that safeguards serve a dual purpose. By possessing the capability to detect, and thereby deter, violations—an eventuality which we all hope will not occur—they fulfill the vital function of demonstrating compliance. It is of the utmost importance, therefore, that safeguards implementation proceed on a cooperative basis between the IAEA and the nations in which safeguards are applied. Safeguards which are characterized by an atmosphere of confrontation and legalisms, even if no violations are detected, can fail in their essential purpose of demonstrating compliance. We are convinced, too, that the adoption of the cooperative attitude toward the application of safeguards will result in a minimum of intrusion and of demands on the valuable time of management officials whose attention is needed for important operational matters.

For its part, the United States undertook, during the negotiations of the Nonproliferation Treaty, voluntarily to make its own peaceful programs subject to IAEA safeguards, thus demonstrating its belief in this cooperative approach.

One of the common misconceptions concerning safeguards is that they involve only a system of materials accountability, or bookkeeping. In fact, the safeguards system of the IAEA includes three basic elements; material accountability, containment, and surveillance. All three elements are necessary for an effective safeguard system, and each of them depends upon the actual physical presence of safeguards inspectors, supplemented in many instances by instruments, seals, and other technical measures. At nuclear power reactors, for example, not only are discharged fuel rods accounted for through physical inventories by visiting inspectors, but seals may be installed on reactors (containment) to insure that there has been no unauthorized fuel removal between inspection visits, and cameras may be employed (surveillance) to detect any unauthorized fuel movements in the spent fuel storage area.

It is important to recognize that international safeguards have a different and more difficult task to perform than do domestic control systems. The former cannot rely on the presumption that no massive conspiracy directed by the government itself exists. At the same time, international systems can and do rely on the fact that a government itself has an overwhelming self-interest in insuring that nuclear material in its possession is not diverted by unauthorized persons. The two systems therefore complement each other.

Safeguards, as I have attempted to make clear, are designed to verify the faithful observance by governments of their assurances against diversion of materials to unauthorized uses. However, the objective measures which they employ for this purpose are equally effective in detecting diversion arising from any source–national or subnational. However, safeguards do not possess the capability of preventing theft, seizures, or diversions of nuclear material by unauthorized groups or individuals, in contrast to detecting such actions. This is the role of physical security systems employing guard forces, physical barriers, and related measures applied by national authorities. The United States is engaged in an active and extensive program of consultation with nations which receive U.S. nuclear material, to strengthen physical security measures. We have found that our partners are well aware that their own interests in preventing the theft or seizure of materials within their borders is at least as strong as our own, and they are cooperating fully in this endeavor. The IAEA is also assisting in this effort by developing authoritative advice on the establishment of effective national physical security regimes.

Effectiveness of Controls

How effective have our measures been against proliferation resulting from peaceful cooperation in nuclear energy? Today, more than 30 years after the commencement of large-scale production of fissionable materials by the United States, five additional countries have developed and tested nuclear devices. Only one country, India, has detonated a nuclear explosion making use of material produced under a program which was substantially assisted by outside sources under arrangements for cooperation in the peaceful uses of nuclear energy. In the Indian case, the plutonium utilized was produced in a research reactor and was separated in a reprocessing plant built by India. These facilities were supplied under peaceful uses assurances, but these were not sufficiently clear to rule out the use of material for a nuclear explosion. It should be stressed, however, that India has provided firm public assurances that this involved the development of a nuclear explosive exclusively for peaceful purposes.

While the diversion of materials produced in the nuclear power fuel cycle is one possible route to proliferation, the facts I have cited indicate that the way employed so far has been the construction of simple facilities specifically designed for the production of fissionable materials. It was partly in recognition of this problem that the United States formulated, proposed, and actively supported the Nonproliferation Treaty which requires non-nuclear-weapon states which are parties to the treaty not to acquire nuclear weapons from any sources and to subject even their independent and indigenous nuclear programs to peaceful-use undertakings, verified by safeguards.

We can conclude from the experience of the past that peaceful nuclear cooperation undertaken under sufficiently strong assurances and safeguards need not lead to proliferation. The one case where such cooperation contributed to the development of a peaceful explosive device, as I have indicated, involved arrangements made at a very early stage of international nuclear cooperation. These arrangements contained no safeguards to verify the use of the reactor. Thus the Indian nuclear explosion in no way casts doubt on the effectiveness of safeguards. Nevertheless we cannot afford to be complacent about a risk of the magnitude entailed by possible further proliferation. Accordingly, we and other leading nuclear nations have been engaged in a thorough and fundamental review of policies relating to international cooperation in the peaceful uses of nuclear energy.

Much of the concern in this respect has centered on the acquisition of facilities for reprocessing or enrichment of nuclear fuel, since it is these steps in the fuel cycle which allow the production of material of immediate usability in nuclear explosives.

Because there has been so much current discussion of the proliferation risks involved in the international transfer of facilities or technology for reprocessing and enrichment of nuclear fuel, I believe we should clearly understand the differences between them.

Reprocessing technology has long been unclassified, and there is much general information about it available. Our ability, therefore, is not unlimited as to how effectively we can restrain the spread of reprocessing capabilities. On the other hand, the technology of uranium enrichment has remained for the most part classified and is not generally available. Furthermore, unlike reprocessing, the processes and equipment employed in uranium enrichment are far from conventional. Thus there is no readily available basis for undertaking uranium enrichment in most countries.

There are also significant differences among various enrichment processes and reprocessing as to the readiness with which weapons-usable material is obtainable. One of the purposes of reprocessing is to recover plutonium in usable form. An enrichment plant for producing light water power reactor fuel, however, need not produce highly enriched uranium. The conversion of enrichment plants designed to produce low-enriched uranium to the production of highly-enriched material is not impossible but it is, for some processes, very difficult and probably quite detectable.

Much of our current effort in the field of nonproliferation is directed toward restraining the spread of reprocessing facilities under national control, while seeking concurrently to develop arrangements under which this step of the nuclear fuel cycle can take place with a minimum risk of proliferation. Toward this end, in his U.N. General Assembly speech of September 22 of this year, Secretary Kissinger called for the establishment of multinational regional nuclear fuel cycle centers which would reduce the incentive for small and inefficient reprocessing facilities, limit the possibility of diverting peaceful nuclear materials to national military use, and create a better framework for applying effective international safeguards. The IAEA is currently studying this concept, including the economic and technical factors related to such regional centers. The establishment of such centers involves difficult technical, economic, and political issues which cannot be resolved quickly. Nevertheless their potential advantages, not only to the achievement of nonproliferation but to the economic development of nuclear power clearly justifies the most determined possible effort.

Another important and constructive development in reducing the proliferation risks of reprocessing is the proviso in recent agreements the French and Germans have negotiated with their nuclear customers that applies safeguards to the transfer of nuclear technology. Under this approach, the recipients of sensitive nuclear technology are required to place under safeguards not only the facilities which they receive from a nuclear supplier, but any future facilities, including those built entirely on their own, which incorporate any of the sensitive technology originally supplied to them. This approach, thus, could bring under safeguards sensitive fuel cycle facilities which might otherwise come into existence without outside assistance.

The United States strongly favors this restraint on the export of any technology in sensitive areas when such export takes place. At the same time, we believe additional measures, such as the multinational regional centers Secretary Kissinger proposed in his U.N. address, are called for.

Another area of importance is the evolution of international safeguards. The IAEA has done an impressive job in establishing and implementing an effective safeguards system—the first of its kind in the world. As additional facilities and materials become subject to IAEA safeguards and, especially, as the more complex and sensitive facilities such as reprocessing plants are brought under safeguards, vigorous efforts will be required on the part of the agency and its members to insure that effective safeguards are devised and applied. While the safeguarding of reprocessing plants and similar fuel cycle facilities is a technically difficult task, we believe there is no reason in principle why safeguards of a practical nature cannot provide a high degree of assurance that significant diversion will be detected.

While our policy of nuclear cooperation has as its primary goal the avoidance of nuclear proliferation, nuclear cooperation has other important goals. The economic and technical interdependence which results from the supply of U.S. reactors and nuclear fuel to other nations can strenghten political ties and can have an important stabilizing influence on international relations. Additionally, the sale of nuclear equipment and services is of substantial economic benefit to the United States, with sales to date estimated at more than $2 billion and cumulative sales through 1990 estimated at over $40 billion.

Conclusion

I wish to emphasize my strong personal view that the proliferation of nuclear weapons is not inevitable. But to avoid such proliferation will require diligent pursuit of a variety of complex political and technical measures which minimize the pressures for proliferation and, at the same time, erect effective controls against it. We in the Department of State, along with our sister agencies in the executive branch, have been and will remain committed to such a course. I look forward to close and continuing cooperation with the Congress in this most important endeavor.